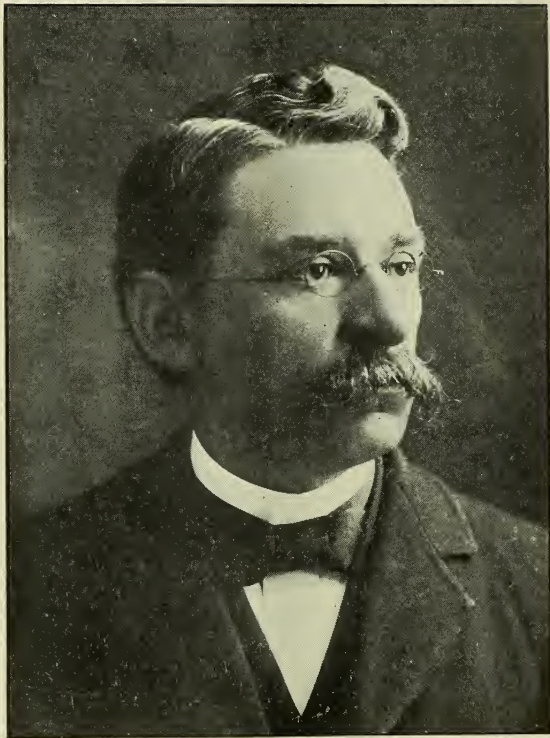


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J. FREMONT HICKMAN.

(See page 58.)

THE AGRICULTURAL STUDENT.

VOL. IX.

OHIO STATE UNIVERSITY, COLUMBUS, DECEMBER, 1902.

No. 3.

TERMS OF SUBSCRIPTION:

| | |
|--------------------|--------|
| One Year..... | \$0.50 |
| One-half Year..... | .30 |
| Single Copies..... | .05 |

While this magazine is published with the approval of the President of the University and the Officers of the College of Agriculture and Domestic Science, the editors are responsible for statements in all unsigned articles.

Address all communications to the Business Manager, Agricultural Student, Columbus, Ohio.

Entered at the Post-Office, Columbus, Ohio, as second-class matter.

PUBLISHED MONTHLY BY

THE AGRICULTURAL STUDENT
PUBLISHING COMPANY.

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EDITORIAL CHAT.

The death of Professor Hickman is a severe blow to the Experiment Station. The station was just getting into prime form for work under the new regime and the sudden loss of one of its foremost men will be sadly felt. Professor Hickman's work throughout his entire length of service has been of the most commendable sort, and his place will be exceedingly hard to fill. It will be no easy task for another man to take up the work, and doubtless many changes in methods and plans will be inevitable. It is sincerely hoped, however, that his successor shall be a man fully in sympathy with the methods and plans of Professor Hickman that the future work of the station may be hampered as little as possible by this unfortunate occurrence. Professor Hickman's relations to the University and to this periodical have always been of the most friendly sort and we join in expressing regret and sorrow at his early death.

We wish to call special attention to the announcement of the Reunion of Agricultural Students, which is to be held at Townshend Hall, January 14,

under the auspices of the Agricultural Students' Union. This is a most commendable undertaking, and an entirely feasible plan, and we see no reason why a very large number of former students should not be present. We believe that the arrangements which have been made for entertainment and profit at this time will please everyone, and we are extremely anxious that a large number be present at this time. A good attendance will mean larger work for the students Union, a more prosperous year for the college and a great benefit to all those who attend.

The constant raising of the standard both in the requirements for admission and for graduation in our agricultural colleges has given cause for a great deal of speculation on the part of rather superficial observers regarding the advisability of such action. It has been persistently maintained that by such measures many young men are excluded because of lack of preparation in the rural schools, and that there is danger of going too far in this process of specialization. On the other hand it is plainly evident that the rapid advancement being made along all lines of agricultural investigations makes it necessary that the courses of instruction be sufficiently broad and thorough to give the student a firm grasp of the principles underlying scientific agriculture as well as the more practical part of agricultural methods. Conditions have changed a great deal in the last decade; the agricultural training that was suited to the conditions then is largely inadequate today, and the colleges must keep pace with the times. That this should cause some dissension should only be expected and that there is need for careful consideration is plainly evident. The matter comes to this however, that with the present system of rural schools and

the growing need for broad and thorough agricultural instruction, there can be no single course suited to both, but two separate and fairly distinct lines of work must be conducted, one for those students whose preparation and ability suits them for thorough training and the other for those who seek the more practical part, mainly because of their incomplete preparation. With the limited means at their disposal therefore it is not possible for one college to obtain the greatest efficiency in both these lines however, so that one must be developed at the expense of the other, or a compromise must be effected. Usually the latter plan is followed, although there are doubtless cases where the former is justifiable.

In our own University it seems best that our longer courses should have the preference, although it is hoped that in the end this will not materially affect the shorter ones. It must be remembered, however, that the call from the farmer's themselves, is immediate and that any means by which they can be helped should not be overlooked. It is hoped that in the not distant future, some feasible plan for direct aid to farmers and their children may be formulated and it is urged that all who are interested in the farmers of the state as well as the University, lend their support to any such plan for advancement.

We are in receipt of the first issue of the Illinois Agriculturist under its new system of monthly publication. This periodical is published by the Agricultural club of the University of Illinois and formerly appeared annually, but under the new management it is to be published monthly. It is still under control of the Agricultural club, however, the editors being chosen from members of the association. The first number presents a pleasing appearance and the

articles are of a high character. We wish the publication every success in its new enterprise and hope for its continued prosperity.

County Agricultural Schools.

That the State of Wisconsin has taken great interest in agricultural education is evinced by the fact that the last state legislature appropriated the money necessary to support two county agricultural schools in which practical agriculture is to be taught. One is located in Dunn county and the other in Marathon county. An outline of the course of study was given in our October issue.

This method of reaching the young people of the rural districts is an outgrowth of the popular agricultural extension movement. For various reasons, farmers do not patronize the agricultural colleges as they should and this is an effort to carry a small edition of the college to them. Pupils enter these schools directly from the country school without difficulty, and it is expected that many boys and girls who would not attend the ordinary high schools, will take the two years course at these farm schools. These schools are not to conflict with the agricultural college; in fact, they are likely to prove feeders for it. While the course at present is somewhat restricted in its scope, the idea of the promoters is ultimately to make it what might properly be termed an agricultural high school.

In many of our larger cities, pupils have a choice between two distinct types of high schools, one literary and the other business or industrial. This is generally considered very practical and there is reason for believing also that an agricultural high school in the rural districts would be practical and successful. Many have not the opportunity of

attending school away from home and to such, this kind of a school would be of incalculable benefit. It could in a great measure take the place of the short college courses in agriculture, which would greatly elevate the standard of the regular college course, and put it at least upon a par with other college courses.

A student entering the arts college has had the benefit of four years of high school training of a similar nature and his work is but a continuation of his previous study. But when one enters the agricultural college under our present system, he is compelled to begin with the elementary principles of agriculture, taking up, as it were, an entirely new line of study. A thorough course in agriculture embraces so many subjects that only a short time can be devoted to any one of them, resulting in only a comparatively superficial knowledge of the subjects studied. With preliminary training, several subjects could be omitted from the college course, enabling the students to get a more thorough knowledge of the subjects pursued and giving a much better opportunity for specialization in their work.

C. A. M'C.

Death of Dr. Kedzie.

Dr. Robert Clark Kedzie, who for 38 years held the chair in Agricultural Chemistry at the Michigan Agricultural College, died at his home, November 10.

Dr. Kedzie was born at Delhi, N. Y., January, 1823. He graduated from Oberlin College in 1847 and since that time has received degrees from two or three other institutions. He was a member of the Michigan legislature in 1867, a member of the Michigan Board of Health from 1873 to 1881, and president of the board from 1877 to 1881. He has

held various positions of importance, such as president of the Michigan State Medical Society, of the American Public Health Association, of the Sanitary Council of the Mississippi Valley, and in 1898 president of the American Association of Agricultural Colleges. He was a member of various scientific organizations and during his long service as professor of chemistry has contributed a great amount of valuable literature along agricultural lines. He was very widely known through his work in chemistry, and was one of the oldest and best known Agricultural Chemists of the country, in fact, he has sometimes been styled the father of Agricultural Chemistry in America. He had retired from active service in the college some months before his death, his son having taken his place. A host of former students of the Michigan College remember him with great reverence and respect.

Centralization of Rural Schools.

One of the most important problems which confronts the educators of today, is the problem of rural education. For years have poets sung their songs of the pleasures of rural life. Nearly every poem contains an allusion to the "old school-house on the hill." Orators have told how great men received their training in the old log school-house, with its slab benches, till some have come to consider the district school as something sacred, something which we dare not change.

But be this as it may, it is nevertheless true that the country with all its natural advantages is not offering the educational advantages for the young as is the city. The important question of what can be done to improve the rural schools is one which is perplexing the greatest educators of today. Anything which tends to improve country schools should

be of interest and should be investigated by all who are interested in agricultural education and rural advancement. Thus we think that the question of centralization of country schools should be one of vital importance to all of us.

One of the great advantages which the city has over the country, is that it is centralized; i. e., there are a large number of pupils in a small radius, which enables the schools to be graded, giving a sufficient number of pupils in one grade to make it profitable to have a teacher for that grade. This is an age of specialists. So to be the most efficient the teacher must also be a specialist, and this is impossible when a teacher must teach all grades from the primary to the high school, as is the case in the country schools as they exist today.

We believe we have a partial solution of this problem in the system of centralization of country schools by hauling the pupils of a township in wagons to a central school building.

One of the advantages of the system is that fewer teachers will be required. Because of the few required, a better selection may be made, and because of the higher wages better teachers may be secured. Also there is to be considered the advantage of one building and equipment, against several buildings to be heated and kept in repair. Each grade in each district must have its maps, charts, etc., while in the central building one set will do for all. Thus the building may be more substantial and better equipped.

The improved health of the children is of importance. It can be seen that the exposure to the weather is much less in a covered carriage, than walking half the distance through the rain and mud. We also usually find the pupil in a more healthy moral atmosphere under

the care of a good driver than when loitering along the road to and from school. Each pupil must be ready when the school wagon arrives in the morning. Thus he early forms the habit of promptness. Tardiness is a thing rarely known in the centralized schools. The pupil receives a training by coming in contact with his fellow pupils, which is impossible in the district school. Thus the system is a character builder.

The centralization system has a benefit in common with the free rural delivery of mail in that the roads will be much improved. This is necessary to make the daily trips with large loads of children.

Another advantage of the system is that it tends to increase the average attendance, increasing the interest of the pupil and the efficiency of his work, and also giving the parent a greater interest in the work of the school.

It has a tendency toward higher education, because it brings a larger number into the high school. A large number of boys and girls will leave school when they have completed the district school, while if carried to a graded school they would complete the work in the high school before leaving.

The expense of hauling the pupil may be rather great, but that is more than made up in the comfort of the pupil, also in the assurance that the parent has that the child will be delivered safely into the care of the teacher.

These advantages of the centralized school system, which have been enumerated are not merely theoretical; the system has passed that stage. Every advantage that has been given can be proven to be a real one, and the system is fast passing through the experimental stage. In Ohio there are 33 townships which are completely centralized, and one hundred and fifty others which have

partial centralization. When the system has been tried it has never been abandoned, and those who opposed it most strongly when it originated, are its strongest supporters now.

Schools were centralized in the east at quite an early date, and the first attempt in Ohio was in the northern part of the state about ten years ago. At first there were only two districts brought together, but now all in the township are under the system.

After this ten years of experience the following report of the results was given by a committee from Michigan: "Very little absence, attendance in some districts increased from 50 to 100 per cent, practically no tardiness, more interest and greater progress in studies, better literary advantages, better teachers, better salaries, better health and greater comfort of the children. This is the report of but one. Others are similar.

This is a good showing for ten years of actual trial and it is proving practicable in various parts of the country. This is a marked step in advance and if the plan proves to be what it now promises, it is to be one method of solving this difficult question of rural education. It will doubtless never be practicable in some places, but there are a great many localities where it will, and much may be expected from the plan in the future.

M. O. B.

Meeting of Ohio Academy of Medicine.

The twelfth annual meeting of the Ohio State Academy of Science convenes at Columbus November 28 and 29. The sessions will be held in the lecture room on the first floor of the Biological Building, at the University, and a large attendance is expected.

The program promises to be very entertaining and instructive, consisting in

the main of short papers and talks on a variety of subjects, there being about ten or more of these to each session, instead of the usual papers of considerable length. There will be four sessions, the first convening at 9:30 o'clock, Friday, November 28, the second at 1:30, the third at 7:30, and the fourth at 8:30 Saturday, November 29. The address of the president, Prof. W. R. Lazenby, will be given at the afternoon meeting Friday.

Arrangements have been made to accommodate visitors near the University grounds. Those desiring to make such arrangements in advance should address J. S. Hine, Biological building.

A Course in Corn Judging.

A circular has recently been issued by the Iowa Agricultural College calling attention to the corn judging school to be held at that institution from January 5th to 17th. Prof. P. G. Holden, who is probably the most eminent corn specialist in the world, will have charge of the work and will be assisted by a number of the members of the faculty in the agronomy division. The aim in offering this course, is to enable farmers to select their seed corn with greater intelligence. Also, those wishing to become expert corn judges, qualified to judge corn at county fairs and expositions, will have an opportunity at this school to prepare themselves for such work. An examination will be held at the close of the school, and corn judging certificates will be issued to all those who prove themselves proficient corn judges. Liberal cash premiums will be awarded to those who excel in this work.

Regular classes in corn judging will meet daily and make a systematic study of corn, using the revised score card. Important and interesting points regarding the selection, storing and breed-

ing of seed corn will be presented by prominent seed corn breeders. The very best samples of all the leading varieties of corn from the greatest breeders, will be on exhibition and also be used in the judging classes. This immense collection of choice corn will afford an unusual opportunity for comparing the different varieties and studying their characteristics.

C. A. M'C.

Farm Accounts.

Keeping accounts on the farm is a business method that is not practiced by farmers as a rule. They look upon bookkeeping as intended only for merchants and bankers; to be sure a great many keep a loose account of their most important transactions, but do not take so much care of keeping account of their numerous small purchases and sales. The losses and mistakes sustained on the farm usually come about through the small leaks, which if the farmer kept an account he could detect and stop. It is just as essential that a farmer keep a record of his business transactions, as it is for the merchant. It is indispensable to the greatest success in farming.

Without it the farmer can never see just where he stands, whether he is making or losing money by this or that course of cultivation. No business is on a safe basis without this knowledge; and no business aside from farming would survive at all without an accurate knowledge of the cost of production. As the merchant keeps account with each department of his business, so should the farmer keep account with each field and crop. The merchant can tell by looking at his account whether he is making or losing on his transactions; and if the farmer keeps account of his work he knows what a crop has cost him in producing it, and when mar-

keted, whether he has gained or lost. Keeping account induces thought and investigation and increases the knowledge and ability in doing business. It gives the farmer positive knowledge, and gives his opinion more weight than the opinion of those who reach their conclusions by guess work. It may be a surprise to know how much money is spent each year, but knowing it will not increase the expense; on the contrary it will have a tendency to decrease them.

Keeping farm accounts will not only help one to get out of debt but will help to increase the income by pointing out the leaks and mistakes so that afterward they may be avoided; and it is the only way whereby a definite knowledge of losses and gains can be ascertained.

The first essential in keeping an account will be to take an inventory of the property in the possession of the farmer. It is the foundation upon which all farm accounts are based.

An annual inventory reveals to the farmer the many things that he should keep in mind in planning his years work. Among other benefits is that it tells what the farmer is actually worth. It shows how much money he has locked up in non-productive property, in farming tools, in stock that is not paying for its keeping in non-productive real estate, etc. It shows how much is in property that is paying a high rate of interest and thus supporting the whole enterprise. By comparing the annual inventories may be shown the net profit or loss of the year. By the inventory the relation of assets to liabilities is shown. The assets would include all the property the farmer possesses, both real and personal, all live stock, the animals separately named and separately valued, all farm produce on hand at the time the inventory is made, the amount of grain and forage, each kind separately listed and valued, all

notes due him, and cash on hand or in bank, and the land valued at the price it would bring on the market.

The liabilities would include all obligations, as notes, mortgages, and outstanding accounts, also rent for house, yard, and buildings and the tax on the farm.

As the farmer's time is fully occupied in the busy season of the year, he must have a system of accounts that will not require a great amount of time to attend to them. Such a system would include one book used for the purpose of taking the inventory, so that each annual inventory can be placed where it can be easily compared with that of the previous year. Another book known as the day book, is used to keep account of the work done on the farm, the amount of help hired, and time given to each crop in producing and marketing it. This may be a book of ordinary size, but, as the farmer should have this book with him so that he can use it at the time needed most, it should be small enough to carry in the vest pocket, or hip pocket of the overalls, and a short pencil always with it. To keep his accounts in the best manner he should have a memorandum book, prepared in such a manner as to have a space at the left side of the page to mark the date and a space of equal size at the right of the page suitable for making entry of cash accounts. The middle of the page will then be left free for the items and the right side will serve to record the cost or selling price. The page for expenditures, and the page for receipts for the same month should be opposite for ease in making entry and balances. The name of the month written at the top of the pages, using the left page for expenditures and the right one for receipts. This book need not be carried with the farmer as the day book would serve to record any small items of business transactions, which in the

evening could be properly recorded in the memorandum book, together with the receipts or expenditures of the day. This set of books will be sufficient for the demands of the ordinary farmer. He cannot expect to always be absolutely accurate for innumerable difficulties will surround the undertaking, but one necessity is the determination to succeed in keeping the accounts properly.

Some objections may be raised as to time required to care for the books and the necessity of noting all transactions the time or day that they occur; but one year of such work will probably be sufficient to show the advantage of having the books at hand to refer to, over the old way of depending on memory and guess work, especially in the gathering of crop and live stock statistics by the assessor will this be valuable. A business college course is not necessary to enable one to care for the books suggested. By keeping an account from year to year, the farmer, if he profits by the lessons which the record would show him should become a better manager of his farm and affairs.

It might be said that as an aid in keeping account with the various fields and crops, all fields should be numbered so that each may be credited with the work put in and the crops removed from it.

All sorts of perplexing questions will arise in keeping farm accounts and they must be met and answered according to the best judgment of the farmer himself.

T. W. D.

An Educational Event.

It is plainly evident in the preparations for the third International Live Stock Exposition, to be held in Chicago November 29, to December 6, inclusive, that the coming event will not

only be the largest but unquestionably the most complete and instructive exhibit of live stock ever brought together in the world. Founded for the purpose of advancing the inseparable cause of live stock and agriculture of America, endorsed and supported by all the leading live stock associations, allied agricultural interests and the foremost commercial and financial institutions representing the substantial work of upbuilding the live stock interests, the exposition this year attains the position sought in the ambition of its progenitors. Actual results of this great educational movement will be practically and conclusively shown, and the educational influence and value is readily determined in the magnificent display in every class and department, with the competitive events bringing forth the best efforts of the breeder and the modern live stock grower.

More manifest than ever is the world wide interest in the coming event, foreign nations naming special representatives to attend the exposition and make careful study of the live stock and agricultural developments, and the student attending the foreign agricultural college will touch shoulders with the American student in the gathering of priceless information at this great school. From the Bonn a Rhein agricultural college of Germany a body of students will come, accompanied by members of the faculty, and other European institutions of similar character and importance have made preparation to be liberally represented. All the leading agricultural colleges and other American institutions of learning have made extensive preparation for large representation, and this feature of the exposition has become firmly established. The stimulation of the interest of the younger

element in the stock raising communities in a better grade of live stock has become one of the most beneficial influences of the exposition, and the farmer's boy will be more in evidence than on former occasions, although he has been by no means in an obscure minority at the preceding expositions.

With the closing of entries, General Manager W. E. Skinner is enabled to form a fair estimate of the number of exhibits, and on that authority is based the statement that in each class, embracing every recognized kind and breed, there will be at least a one-third increase over last year. This brings the highest types and every distinctive feature in the carefully bred animal and represents the prize winners of the expositions during the year in all parts of the country and the best product of the farm and the range. Many advantages are gained by the exposition this year in the general distribution of special railroad rates, and additional exhibition facilities are provided by the Union Stock Yard and Transit company, which is directly responsible for the existence and maintenance of the great exhibit. As an instance, the hog and sheep exhibits will be in new quarters, separate and distinct and free from possibility of contagion, and accessible direct from the cars, obviating the cumbersome requirement of a wagon haul. In addition to the regular daily program of ring judging and prize awarding and important ceremonies in the evening, there will be a special entertainment arranged for each evening, and extensive preparations are being made for the comfort and entertainment of all visitors to the greatest live stock exhibition ever known.

The Dairy School.

Dairymen's Meeting.

The Ohio State Dairymen's Association will hold local meetings as follows:

Nov. 25.—At Windham, Portage county. Speakers—A. Slaughter, of Ravenna, O.; Prof. C. S. Plumb, and Prof. John W. Decker, O. S. U.

Dec. 1.—At Waynesville, Warren county. Speakers—A. Slaughter, Pres. L. P. Bailey, of Tacoma, O., and Prof. John W. Decker.

Dec. 2.—Mt. Carmel, Clermont county. Speakers—President L. P. Bailey and Prof. John W. Decker.

Dec. 3.—At New Vienna, Clinton county. Speakers—President L. P. Bailey, A. Slaughter and Prof. John W. Decker.

Dec. 29.—At Triumph, Trumbull county. Speakers—President L. P. Bailey, Prof. H. J. Noyes, of Wisconsin, and Prof. John W. Decker.

Dec. 30.—At Rock Creek, Ashtabula county. Speakers—President L. P. Bailey, A. Slaughter, Prof. H. J. Noyes and Prof. John W. Decker.

Dec. 31.—At Mesopotamia, Trumbull county. Speakers—Same as at Rock Creek.

Jan. 1.—Garrettsville, Portage county. Speakers same as at Rock Creek.

Jan. 2.—Delta, Fulton county. Speakers—President Bailey, Prof. Noyes and Prof. Decker.

The last five meetings will be more specially for cheese-makers and cheese factory patrons.

At all there will be demonstrations in milk testing, stereopticon lectures and judging of dairy cattle.

Charles E. Oyler, O. S. U. Dairy class '02, has accepted a position as buttermaker in the Lithopolis Creamery.

Howard Sherman, O. S. U. Dairy class '02, who has been operating a skimming station at Martinsville, Ind., is now in charge of the Jacob Ash creamery at Mt. Vernon.

A student of the last dairy class at O. S. U., with very little previous experience, built a creamery and operated it successfully for several months. He then sold out and took a position with an Ohio creamery. He writes us that this creamery has received as high as 10,000 pounds of milk per day, but has never paid a dividend. The first month with 3,700 pounds of milk per day he cleared \$100 for the creamery. The secret of it all was in the separating and churning. At this rate what dividends is the Ohio Dairy School paying the farmers of Ohio?

Very recently there was purchased for use in the class in Animal Husbandry, five Hereford and five Shorthorn steer calves, and four Aberdeen Angus yearling steers. These are all either very high grade or pure bred, and are good representatives of the breeds in question. The Herefords and Shorthorns were bought of Mr. C. B. Shough, of London, O. These he purchased at Kansas City in October at the time of the "Royal" live stock show. Part of these calves were in the show pens, and were either bred by Col. C. C. Slaughter, of Boswell, New Mexico, or by Richards & Comstock, of Nebraska. The Angus were purchased of Mr. S. S. Robison, Mt. Sterling, O. These cattle will be fed and kept for class room use and show until they reach such a condition as will justify disposing of them. They should serve as excellent illustrations in class room work, and will certainly be a desirable addition to the University herd.

Agricultural Students' Reunion.

Much interest is being shown in the plan for a reunion of agricultural students which is proposed by the Agricultural Student Union, to be held at the time of its regular January meeting. Circulars have been mailed to all graduates and ex-students of the College of Agriculture with a return card enclosed in order to ascertain the probable number that will be present. Returns up to date show that considerable more than half of those heard from intend to be present so that from these indications a large crowd is expected.

The program will be an interesting one, and it is hoped that all who possibly can, will endeavor to be in Columbus at that time. The committee on arrangements promises an entertaining program, an inviting luncheon and a all-round good time. The date is Jan. 14, at the time of the regular State Farmers' Institute and the sundry other agricultural meetings that convene in Columbus at that season and every up-to-date agriculturist that has ever been connected with the University should be there.

Plans for St. Louis Exposition.

The plan of grounds for the St. Louis Exposition has been completed and the work is progressing satisfactorily. The plan of arrangement is most elaborate and includes some entirely new features. The buildings are some of them of immense size, the one for Agriculture being 1,600 by 500 feet, and the Horticultural building being 800 by 300 feet.

The agricultural exhibit is expected to be by far the largest ever attempted, the outdoor plans being especially elaborate.

Space has been allotted in the western part of the grounds for a great garden map of the United States. The allotment was made upon the application of W. J. Spillman of the Government Department of Agriculture, expert in grasses and forage plants. The map will constitute a part of the exhibit of the Bureau of Plant Industry, and will have a southern exposure well suited for the purpose. Two acres will be taken up with this map. The state lines will be marked by walks in cinders, red gravel or some other material. In each state reservation will be shown the economic plants produced in the state and for which the state is known. The corn of Kansas, the wheat of the middle states, the cotton, tobacco and sugar cane of the Southern states, the orange and pineapple of Florida, will all be shown. These plants which do not grow in this latitude normally will be forced under glass in hot beds. Mr. Spillman says that two acres will be sufficient to carry out this plan, allowing an acre 200x400 feet. This would make the state of Illinois about 75 feet long.

With this map spread out on the southern slope, in the place allotted, it would appear from the Agricultural building hill like a bird's eye view of the United States, while the visitor walking on the paths would, so far as vegetation was concerned, be traveling through the country.

The outdoor exhibit will have a number of additional features which will make it the most remarkable agricultural exhibit ever made, and it is indeed a novelty. It was tried in miniature at two former American expositions, but at those expositions it was confined to grasses and forage plants. The range of the present outdoor exhibit is shown by the following points which will be covered by it.

1. A Cereal exhibit in which will be shown growing every species of wheat, oats, barley, rye, corn, emmer, spelt and einkorn. As there are over 4,000 varieties of wheat and some hundreds of corn, the extent of this exhibit may be judged.

2. Diseases of Field and Garden Crops. Plants will be shown afflicted with various diseases and one-half of the plants will be treated scientifically to show how the disease may be eliminated. Thus, potatoes will be inoculated with blight and half the plants treated to kill the blight. Smutted oats will be shown under the same conditions.

3. Plant breeding or crossing of varieties will be shown by offering the parent plants and the hybrid growing between. Many varieties of hybrid wheats and of garden vegetables hybridized to produce strange varieties will be shown.

4. The treatment of Sand Dunes with vegetation to bind the loose sand and prevent it from blowing under storm winds. The department has prepared binding grass which grows on the sand and makes the shifty dunes a solid soil. Dunes will be shown in the exhibit covered with vegetation.

5. The Rotation of Crops. An ideal farm covered with crops which follow in rotation in extensive farming will be shown. The rotation as produced in the best farm is: First, corn; second, oats; third, clover and timothy. On an area of a few rods long this farm can easily be shown.

6. Growing crops for seed and methods and machinery in use on well equipped seed farm will be shown. Plants of living varieties will be used so that the gathering of seed may go on throughout the exposition.

7. Medicinal plants. Dr. R. H. True, the expert in charge of this division, has

prepared a large list of plants that grow normally in this latitude which will be shown alive and growing.

8. The tropical plants of the American Island possessions will be shown outdoors in classes as well as the primitive agricultural implements which the natives use in tilling the soil.

9. Test Crops. New economic plants which are under cultivation in other countries will be shown in this exhibit to demonstrate the possibility of cultivating them in this latitude.

10. The common poisonous plants, such as the Loco and the poison hemlock which create havoc among stock, will be shown that the farmer may learn to identify them and thus circumscribe the damage they do. Poison ivy, poison oak, poison shumac and such plants will also be shown, each properly placarded that the visitors may know them.

11. Fibre plants, such as flax, hemp, cotton, jute, sisal, will be shown together with the products from them in various stages.

12. A School Garden, such as is used in some of the eastern states in instructing public school pupils in nature, will be maintained showing not only the ordinary decorative plants, such as dahlias, cabbage, hollyhocks, but also garden vegetables, such as radishes, cabbage, turnips, and cauliflower will have a place here.

Mr. Spillman believes that ten acres will be sufficient for all these purposes. He, himself, will have charge of the grasses and forage plants. The details of the other exhibits will be worked out by their heads of departments. M. A. Carleton will have charge of the cereals. V. K. Chestnut will have charge of the poisonous plants, L. H. Dewey will have charge of the fibre plants.

Dr. B. T. Galloway, the Chief of the Bureau of Plant Industry, and his assistant, A. F. Woods, will be in charge of the exhibit.

J. Fremont Hickman.

J. Fremont Hickman, Agriculturist of the Ohio Experiment Station, died of typhoid fever at his home in Wooster, Wednesday, October 22, after an illness of six weeks. Mr. Hickman was born in 1856 near East Liverpool, Columbiana county, Ohio, where his early life was spent upon the farm, and his early education received from the district schools. His education was completed at the Pennsylvania State College, from which he was graduated and at which he held the position of superintendent of one of the college farms for some time.

In 1887 he was elected Agriculturist of the Ohio Station, which position he retained until the time of his death. His work has been that of conducting field experiments with crops and fertilizers, supervising the feeding experiments and managing the station farm. In his dealings with the various intricate problems connected with this line of experimental work he has shown an accuracy and skill seldom equalled, and although cut down in the very prime of life the results of his work remain as a monument to his untiring energy, his clear-cut methods and careful supervision of experimental details. He was a man of stolid integrity and deep moral piety, which virtues he possessed to an extreme degree, and his devotion to his work for the mere love of it was one of the most notable features of his character. Quiet in manner, genial in temperament, he possessed a genuine manliness, and an uprightness of character which won the esteem of all who knew him.

Mr. Hickman came to the station well equipped for his work from both the educational and practical standpoints, and the results obtained show very

clearly the advantages of his thorough preparation. He was popular at Farmers' Institutes, and although not a gifted orator his wide practical experience always won for him the respect and interest of his hearers. He was an active and consistent member of the Presbyterian church, occupying the office of elder at the time of his death.

A wife and two children remain to mourn his loss.

At a meeting of the faculty of the College of Agriculture, of the University the following memorial was adopted:

"With a deep feeling of loss the faculty of the College of Agriculture of the Ohio State University, has just learned of the untimely death by typhoid fever of Prof. J. Fremont Hickman, Agriculturist of the Ohio Experiment Station, and we desire to place on record our appreciation of his services to agriculture, and of his character as a man.

"Prof. Hickman was born in Columbiana county, Ohio, and spent his youth upon the farm. After preparation in the public schools he completed his education in the Pennsylvania State College. Returning to the farm, he spent several years in equally earnest and successful farm practice, and then re-entered his college for the purpose of continuing his studies, and soon thereafter was appointed an assistant in its Department of Agriculture.

"In 1887 Prof. Hickman was elected Agriculturist to the Ohio Experiment Station which was then located on the grounds of the Ohio State University, and since that time he has been prominently identified with investigations with field crops and commercial fertilizers, which work he developed with signal success. He was also well and favorably known as an instructor at farmers' institutes. His ability and genial temperament, his loyalty and genuine manliness of character have won for him the respect and esteem of all who knew him. Those best acquainted with him have always found him a man of high principle, unswerving fidelity to purpose and friends, industrious and progressive in his chosen field of scientific work.

"In the death of Prof. Hickman we part from one who endeared himself to us by his manly qualities, while his loss to the state as a valued educator, investigator and citizen is great indeed.

"To his bereaved wife and children we extend our heartfelt sympathy, and while we deeply mourn his loss, we rejoice in the life so rich in those qualities which make the lives of men good, true and beautiful."

WILLIAM R. LAZENBY,

CHARLES S. PLUMB,

DAVID S. WHITE,

Committee.

How Insects are Studied at the Ohio Experiment Station.

The study of insects is one that is rapidly growing in importance and exciting the interest of the farmer and fruit grower. It might be said that insect injuries are becoming more serious than they formerly were. The farmer and fruit grower are realizing this and they are further learning that the problem is one that must be met in an intelligent and scientific manner. There are a number of reasons why insect injuries are so serious in the United States, a few of which are as follows:

1. Cultivation has affected the relationships of depredating insects very materially. Cultivation induces change of habit in insects and also in host plants. It also presents large numbers of host plants in continuous areas and affords places of less struggle than the organisms are forced to occupy under normal conditions.

2. Many injurious insects have been imported from foreign countries.

3. These introduced species have in many cases increased their destructiveness.

Anyone who could have seen the great amount of interest taken by the

farmers at the State Fair in the entomological display of the Ohio Experiment Station, would have been convinced that the study of insects is one that the farmer is beginning to regard as very important. This work at the station is becoming more accurate and efficient and the information thus secured is becoming better adapted to practical application in field, orchard, or garden.

In order that insects may be studied more closely, carefully, and accurately the station has erected what is termed an insectary. This resembles an ordinary green-house, and is especially adapted to the study of the development of insects. The insectary has become almost as necessary to the working entomologist as has the laboratory to the chemist, and while it is especially true in entomological investigations that one must "study nature where nature is," it is equally true that one cannot, in all cases, watch with the necessary care and constant application in the fields that he will be able to do in a fairly well equipped insectary. Not only can insects be transported thousands of miles, while in an inactive state, and their development watched at close range, as it were, but eggs and larvæ may be brought in during late autumn or winter, and studied through their various stages, frequently long before they have appeared outside, and in cases of uncommon or unfamiliar forms this will give the investigator a vast amount of information that he can use to great advantage when the species appears in the fields under natural conditions. It is next to impossible to watch an insect in the field closely, throughout the months of its life cycle. This, however, can be very closely and accurately done in the insectary, and here is where its value lies. Insects in the larvæ or egg stages are often sent to the station and

placed in breeding cages in the insectary, where they can be reared and studied through their entire life cycle. Remedial and preventive measures can often be tested in a small way and thus it is possible to learn what will be worth trying in the field.

It is well known that insects have weak points in their life cycle, which, if understood, will give an advantage in overcoming them, and usually the cheapest and best way of overcoming insects is to attack them at this stage. This can frequently be learned in the insectary, and it thus becomes a sort of searchlight to enable the entomologist to see more clearly in the fields. The ideal that is desired is to be able to place the insect that is to be studied under as nearly natural conditions as possible, and with this purpose in view the equipment is constantly being improved. When collections are sent to the station they are placed in a breeding cage, labelled and all information regarding the locality from which the specimens came, the extent of the injury done, etc., are put on file and thus the problem is studied in a systematic and careful way. Maps of the state are made which show the regions infected by certain insect pests, and the extent of the injury done and the entomologist is thus enabled to keep track of the spread of insects and to show the area covered by the outbreak of any pest. The farmer may aid very materially in the solution of these problems and it will not only benefit him, but it is his duty to co-operate in the work.

C. B. H.

Colics of the Horse.

Under the name of colics, is designated a whole group of pathological conditions of the stomach and intestines,

expressed by more or less intense suffering.

The expression colic, does not indicate a well defined affection; on the contrary, it is applied to a large number of morbid processes, the clinical symptom of which is abdominal pain.

Colics of the horse have been known from the earliest times, three forms having been described by Columella, in the first century. Already in the third century Eumelus advises a treatment for colics. Of all internal diseases affecting the horse, colics are by far the most frequent. Clinical statistics from Germany show that 40 per cent. of the internal diseases are colics. These statistics further show that the average mortality is about 13 per cent.

The general causes of colics, may be summarized as follows :

1. Predisposition.
2. Colds.
3. Overloading the stomach.
4. Dirty alimentary matters.
5. Abundant production of gas.
6. Intestinal worms.
7. Constrictions.
8. Prolonged abstinence.
9. Unusual movements.
10. Retention and hardening of excrementitious matters.
11. Calculi and concretions.

The symptoms, independent of cause, are always marked at the beginning by expressions of sudden pain. The animals are nervous, scratch the ground, stamp, become restless, bend their legs half way and lie down. They look at their flanks, sway the tail, arch the spinal column, and stretch the head and neck. At times they become extremely violent, and then remain quiet again for a short time. On examination of the patients, we find an irregular distribution of temperature, the buccal cavity dry, and the mucous membrane is either hot, injected, and catarrhal, or pale and cold. As there are many forms of colic,

the symptoms will vary, and it would be a difficult matter to give a reliable list of symptoms that will apply even in a general way, to the many forms of so-called colic. The course of colics is ordinarily extremely acute, often lasting only a few minutes and rarely over thirty six hours, in which case they are fatal.

It is impossible at the outset, to formulate a prognosis, with any degree of certainty. Improvement is made apparent by diminution of pain, and a more regular distribution of the temperature of the body. Among the unfavorable symptoms are: An accelerated, hard, small evasive pulse, elevation of temperature, intensity of pains, and cold profuse sweats.

The treatment, of course, varies with the kind of colic, and as there are at least six different forms of colic, which cannot be entered upon here, a so-called general treatment, would be of little or no significance. N. D.

The Farmers' National Congress.

The annual meeting of the Farmers' National Congress, which convened recently at Macon, Ga., was very successful, over 800 representative men being present. As is well known the purpose of this organization is not to discuss features of practical agriculture, but rather those general questions of legislation and political economy as they affect the agriculturist and the cause of agriculture as a whole.

Among the resolutions adopted at the recent meeting the following are of interest: A resolution favoring reciprocity when it can be used to enlarge the markets for agricultural products; a resolution asking Congress to increase the appropriation for the improvement of public roads, through the Department of Agriculture; a resolution asking that the supervision of the Agricultural Depart-

ment now exercised over the expenditure of the funds for experiment stations be extended to include the funds given to Agricultural colleges; a resolution asking that the appropriation to the various experiment station be increased \$15,000; a resolution urging Congress to increase the appropriation to the Department of Agriculture as a whole.

The objects of this organization are in every way commendable and the benefits resulting from such a united effort toward a betterment of agricultural conditions are becoming more and more evident. Lack of organization has long been the most prominent feature of our agricultural development, but such organized efforts of such representative men cannot but be productive of vast good to our system of agriculture. So soon as the farmer realizes his need and makes it known in an organized effort, then and then only will he receive proper recognition at the hands of legislators and those in authority. The Farmers' National Congress is fulfilling a noble purpose and much good may be expected from its efforts as time goes by.

Farmers' Sons in Student Judging Contest.

The managers of the International Live Stock Exposition at Chicago announce the following:

A most highly interesting and instructive innovation this year at the International Live Stock Exposition will be the admission of farmers' sons into the students' judging contest. The donors of the premiums for this year's contest, Messrs. Spoor, Clay and Sanders, have specially specified that the contest be left open to all farmers' sons, regardless of their belonging to any agricultural college.

This will give the colleges an opportunity to prove up their teachings, and

boys who are not able to take the time for schooling will have an opportunity to become a part of this educational feast. It will hardly be expected that any recognized, first-class school will under these circumstances, fail to enter the lists, as the schools would better look to their laurels in such a contest. Fathers whose boys have not attended this Exposition should not allow anything to prevent the boys from coming this year to watch this event, so as to prepare themselves for subsequent contests, as undoubtedly at future expositions this feature will remain a fixture. In addition to its being a pleasure to send the boys, fathers should consider it a bounden duty to give them the benefit of this week's live stock education, and the man who farms and is not a student striving to improve and put his place on a better footing each year will not be a success.

The Agricultural Student and the Farmer.

F. S. JOHNSTON, TEXAS AGRICULTURAL COLLEGE.

The schools of agriculture and the experiment station at our various land-grant colleges are departments of those institutions that have as a reason for their existence the betterment of the condition of a class of people representing approximately one-third of the population of this country.

The time has come when one-third the population of the United States finds itself providing food and other products for itself and supplying the other two-thirds with agricultural products and also contributing products to the rest of the world which have a money value of nearly one billion dollars, or approximately three-fourths the entire value of the exports of the United States. This would seem to indicate concentration

and specialization of interests in agricultural affairs, as well as in the other lines of work. One century ago 97 per cent. of our population found it a difficult problem to provide for themselves and the remaining 3 per cent. the necessary agricultural products, without sending anything abroad. We now have not only a much greater variety of products, but an immensely increased amount of products.

With these conditions before the farmer and the men in our agricultural colleges and experiment stations, it is evident that the combined efforts of both will be required to meet not only the present need, but the ever-increasing demand of the world along these lines of work. If there has in the past been any drawing apart from lack of interest, lack of understanding or lack of confidence, this must be overcome, for the need is great and all will be required to meet it.

The men connected with our experiment stations are almost universally country born and raised, and are closely in touch with the interests of the practical farmer. On the other hand, the average practical man is not, perhaps, in as close touch with the experiment stations or schools of agriculture as his best good would warrant him in being. There are many experiments carried on at experiment stations and many points brought out in the instruction given in the schools of agriculture that would save the farmer much labor and time and no end of trouble if he were to avail himself of what is rightfully his. No good business man would hire a man to do certain work for him and then pay no attention to the work done if he expected to gain any profit from the employment of the labor. Both the practical men, then, and the scientific men have something to give, and it is well in proportion to the amount and kind

given. Co-operation is absolutely necessary. The experiment station men and men in the schools of agriculture spend a great deal of time studying problems connected with the live stock industry, the soil, the crops of the farm, effects of fertilizers, dairying in all its phases, fruit-growing, market gardening, insects injurious to agricultural products, and many other lines of work of practical and scientific interest to the farmer, but which he has neither the time nor the money to deal with himself.

On the other hand, the farmer can be particularly helpful by taking an active interest in making his neighbors acquainted with this kind of work and by reporting his success in following out suggestions made by the stations and schools. He will find that great good comes to him from making careful observations along the lines suggested. Varying conditions of soil and climate make it necessary that thought and care be used in applying results taken from different localities.

Is it not true, then, whether the commonly accepted fact or not, that when a question of importance comes up relating to agriculture, that much good comes from a conference between the two arms of the industry? One side has for its business the production of goods for the world's consumption; the other class has for its business the inquiry into the most rational methods of production. Let us join hands, then, and all pull together for a common end.—From "Up-to-Date Farming and Gardening."

Country Life in America for November.

Country Life in America for November is a beautiful magazine, full of suggestions about the best things to do out-of-doors during the month. The leading

article is concerned with "a walking tour" in the country, which offers one of the most attractive autumn outings; a person can learn to cover twenty miles a day and see and enjoy a great many things. "The Ubiquitous Quail" is a trenchant article on our little game-bird in and out of "season," with something about the ways of bird-dogs, illustrated with many remarkable photographs of dogs pointing game. Other important articles, with large illustrations, have to do with "Old Time Gardens" and the home-life that centred about them before the days of great cities; "Staircases," as treated in "The Making of a Country Home" series, showing the opportunities and problems of the most fascinating features of home-building; and "The Hunnewell Estate at Wellesley," a lake-side home famous for its Italian garden and landscape architecture, the story of which is perhaps best told by the profusion of superb pictures that characteristically illustrate the most features of this unique magazine. The practical gardening department this month has mainly to do with details about growing chrysanthemums of the sort adapted to the home window-garden; the "Calendar" of the out-door occupations, sports and nature study particularly reads of things in the November woods and fields—of big game in the north woods, of quail, grouse and waterfowl, as well as the many small birds and flowers, like the fringed gentian, that linger into November. One may well grow enthusiastic over W. B. Thornton's story of a night in the woods after the wary raccoon. No issue of this large magazine has been more redolent of the spirit of changing seasons than this beautiful Thanksgiving number.

University News.

Work on the addition to the chemical building is progressing rapidly and it will probably be ready for use some time next term. The construction of the veterinary building is also being hastened, and it is expected to have it under roof by the latter part of January.

A room for the storage of seed corn has been constructed in Townshend Hall. It is entirely mouse-proof and will hold when full from eight to ten thousand pounds of corn.

Among the old students who visited the University the past month were: W. R. Beattie, F. J. Tyler and D. W. Galehouse, of the Bureau of Plant Industry, U. S. Department of Agriculture and A. G. McCall, A. H. Snyder and H. L. Belden, of the Bureau of Soils; C. N. Breese, of Lima, O., J. H. Jefferson, of Bloomingburg, O., and W. H. Byers of Lilly Chapel, O.

Dr. H. W. Brown, O. S. U., '02, now practicing in Columbus, has been appointed as assistant in the Clinical Department of the O. S. U. Veterinary College.

Dr. M. B. Lamb, O. S. U. '01, recently Professor of Pathology and Bacteriology at the State University of Washington, is back at O. S. U. taking post-graduate work.

In recent years several of the graduates of the College of Agriculture have entered the government service under the various divisions of the Department of Agriculture. Regarding these men the following is of interest:

A. G. McCall is with the Bureau of Soils, working with Dr. Briggs, in the physical laboratory.

F. W. Taylor is with the Bureau of Soils, and will spend the winter in the

Colorado desert in Southern California, where the Bureau is making a detailed survey because of a large irrigation system which is proposed for that region.

W. R. Beattie is with the Bureau of Plant Industry and has charge of the experiment plats for that bureau.

E. O. Fippin is with the Bureau of Soils, and will spend the winter in Florida.

C. N. Mooney is also with the Bureau of Soils, and will spend the winter in Mississippi.

F. J. Tyler is with the Bureau of Plant Industry, and is at present in Washington. He will spend part of the winter in New Orleans in work for the Bureau.

N. P. Neill is with the Bureau of Soils and will spend the winter in Needles, California.

D. W. Galehouse is with the Bureau of Plant Industry, doing work in seed testing. He is stationed at Washington.

A. H. Snyder is with the Bureau of Soils working with Prof. King, recently of the University of Wisconsin, but now Chief of the Division of Climatology and Soil Management of the Bureau. Mr. Snyder will spend the winter in Washington.

H. L. Belden is also with Prof. King of the Bureau of Soils, and is at present at Washington.

H. A. Clark is with the Division of tobacco investigations of the Bureau of Soils, and is stationed in Connecticut.

The first edition of the quarterly published by the fraternity of Alpha Zeta has been received at the STUDENT office. It is edited by Prof. C. W. Burkett, of the North Carolina Agricultural College with John F. Cunningham, of the Ohio Farmer staff, as associate editor. It is a pleasingly arranged and attractive edition and contains a number of contributions from men in the various chapters

setting forth the objects and ends of the fraternity and the work it is doing among the agricultural colleges of the country, in its endeavors to advance the interests of agriculture.

Booker T. Washington spoke at convocation November 19, on the Tuskegee Institute. The address was a most interesting and instructive one, and great enthusiasm was shown by the students in their appreciation of Mr. Washington's work. He spoke with special reference to the Agricultural and Industrial training for which the institute stands, and outlined in a brief but emphatic manner something of the work which the institute is doing.

Clark J. Halverstadt was appointed to represent the College of Agriculture at the meeting of the Federation of Agricultural Students, which meets at Chicago at the time of the International Live Stock Exposition.

General Agricultural News.

Mr. George Huesmann, who at one time filled the chair of pomology and forestry in the University of Missouri, and who is well known from his contributions to the literature of pomology and viticulture, died recently at his home in California at an advanced age.

Professors of Cornell University who reach the age of 70, will hereafter be retired with a pension. Their salaries will continue for one year and they will thereafter receive \$1,500 per year for four years, which time will undoubtedly be extended. They will act as special lecturers with such duties as may be assigned them. Professor I. P. Roberts, Professor of Agriculture is the only science man who will be affected.

Prof. Hugo Kahl, lately connected with the Illinois Experiment Station, has resigned to accept a position as custodian in entomology at the Carnegie Museum.

The Indian government is to form a board of scientific advice comprising the heads of the meteorological, geological, botanical, forestry, agricultural and veterinary departments together with specialists in other lines. The main object is to promote the economic development of the country. The board is to prepare each year a general program of research and a report describing what has been accomplished. The government owns the largest landed estates in the world and the prosperity of the country is mainly dependent upon agriculture. Hence practical research is the predominant consideration. The members of the board will act as advisers to the government.

A new dairy building at the University of Missouri, was dedicated November 13. The cost of the building was \$40,000.

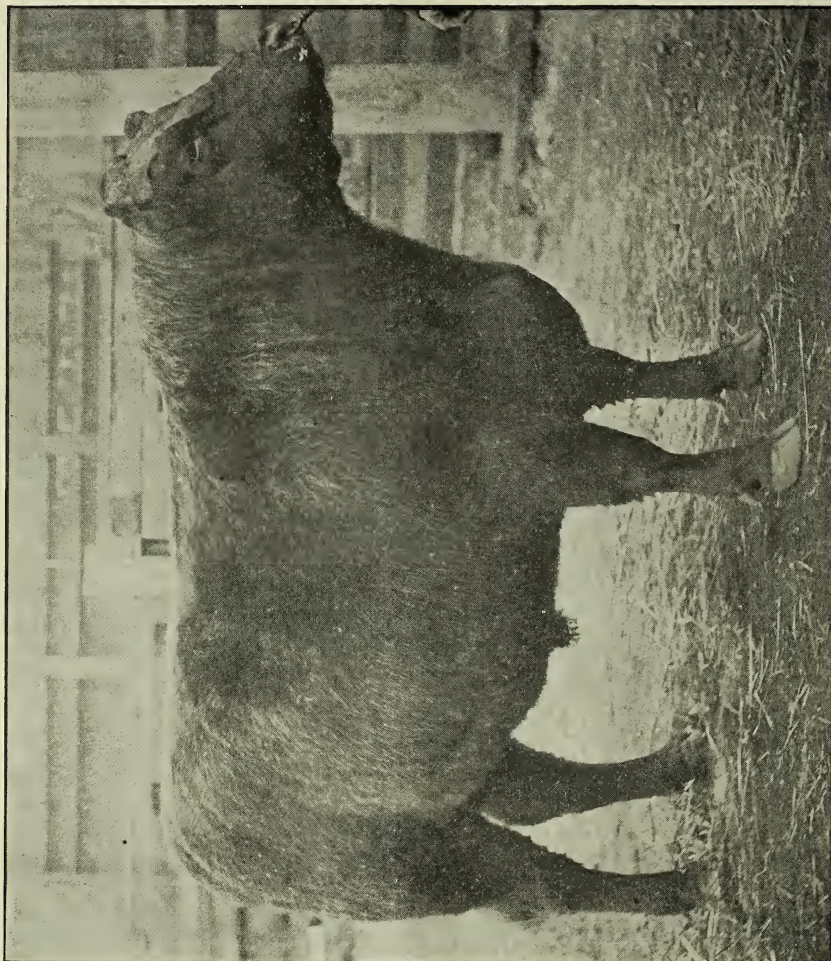
The New York Experiment Station reports an unusual and serious trouble with harvested apples which has appeared in Western New York. It is confined entirely to scabby apples. A white or pinkish mildew appears upon the scab spots and transforms them into brown, sunken, bitter, rotten spots. The damage done has been enormous amounting to thousands of barrels in Niagara, Orleans, Monroe and Wayne counties. Greenings and Fall Pippins seem to be the varieties most affected. It has been found that the white mildew on the scab is the immediate cause of the rot and that it is a distinct fungus, having no connection with the scab, the latter merely furnishing a place of en-

trance into the apple. Most damage has been done after the fruit has been picked and stored or piled. Apples placed in cold storage however, escape until placed upon the market, when it is liable to appear. No direct preventative has as yet been discovered, although investigations are in progress. The whole trouble is of course due to a lack of thorough spraying since the prevention of the scabs would prevent the growth of the fungus.

Book Reviews.

HOW TO LIVE, by Edward Everett Hale; Little, Brown & Co., \$1.00. A compilation of the papers written for the Chautauqua Reading Course, under the above title, by this eminent author.

The title of this book in connection with the author's name, should insure its popularity among all lovers of good literature, and those who have not been so fortunate as to have been able to read these papers as they appeared in the Chautauquan can here find them in convenient form. Probably no man would be more seriously heeded on the questions of life than Edward Everett Hale, and a complete volume given to the discussion of these subjects is a treasure. The style of the book is pleasing, yet forcible and convincing, the author's peculiar aptness in getting at the root of things appearing in every chapter. He tells how to choose one's calling, how to sleep, to exercise, to think, to study, to regulate expense, to dress, to know God, and discusses one's duty to church, to state and to his fellowmen. With no attempt at anything but the most plain and straightforward expression he impresses upon his readers the possibilities, the pleasures, the obligations of life, in a manner peculiar to a master of the art of living. None can help profiting by its careful perusal and the book is one for every permanent library.



"Shamrock," the grade Angus steer that won first prize at the Chicago Exposition—owned by the Iowa Agricultural College.